

## CLAIMS

1. Portable communication device (10) comprising:  
an antenna feeding circuit (27),  
5 at least a first part (12) having a hollow interior and provided with a main section having a certain width, length and a first height and where different electrical elements are provided, and  
an antenna system comprising:  
10 a ground plane (22, 24) located within and extending along essentially the whole width and the length of at least the main section, and  
an antenna element (28) located within the first part,  
wherein said ground plane is provided in one piece and the only electrical elements of the first part being electrically connected to said ground plane are radio transmission elements .  
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2. Portable communication device according to claim 1, wherein said antenna element is distanced from the ground plane with at least approximately the first height in a height direction of the first part.
- 20 3. Portable communication device according to any previous claim, wherein the antenna ground plane and the antenna element are provided from the same piece of material.
4. Portable communication device according to any previous claim, wherein the  
25 ground plane and the antenna element are provided on one and the same substrate (36).
5. Portable communication device according to claim 4, wherein the ground plane  
30 is provided on a substrate provided for a user interface (38) arranged in said first part.
6. Portable communication device according to any previous claim, further comprising a second part (14) and wherein the first part has a hinging section  
35 (20), for providing rotation of the first part in relation to said second part around an axis (16) of rotation.
7. Portable communication device according to claim 6, wherein the ground plane is connected to the second part, preferably via the hinging section, for providing a common ground potential in both parts.

8. Portable communication device according to claim 7, wherein the antenna feeding circuit is provided in the second part.
- 5 9. Portable communication device according to any of claims 6 - 8, wherein the hinging section is hollow and has a second higher height and said antenna element is provided inside the hinging section.
- 10 10. Portable communication device according to any of claims 6 - 9, wherein the ground plane stretches into the hinging section.
- 15 11. Portable communication device according to claim 10, wherein the ground plane is provided with a bent section (24) provided within the hinge section and bent away from the part of the ground plane provided in the main section for providing an increased distance between the ground plane and the antenna element in the hinge cavity corresponding to the second height.
- 20 12. Portable communication device according to any previous claim, wherein the antenna element is a multiband antenna element.
13. Portable communication device according to any previous claim, wherein the antenna element is a PIFA antenna element.
- 25 14. Portable communication device according to any previous claim, wherein the antenna element is a monopole antenna element.
15. Portable communication device according to any previous claim, wherein it is a cellular phone.
- 30 16. Antenna system for provision in a portable communication device, the device having an antenna feeding circuit (27) and a first part (12) with a hollow interior and provided with a main section having a certain width, length and a first height where different electrical elements are provided, and comprising:  
a ground plane (22, 24) located within and extending along essentially the  
35 whole width and length of at least the main section, and  
an antenna element (28) located within the first part,  
wherein said ground plane is provided in one piece and the only electrical elements of the first part having electrical connections to said ground plane are radio transmission elements.